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Solvent effect on stretching vibration frequencies of the N-H and O-H groups of diphenylamine and phenol in complexes with various proton acceptors: Cooperative effect

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Abstract

Solvent effect on the stretching vibration frequencies of the O-H and N-H groups in complexes of phenol and diphenylamine with bases in aprotic and proton-donor solvents was studied by IR spectroscopy. Linear correlations of high quality were obtained between the frequencies of hydrogen-bonded O-H and N-H groups in these complexes in aprotic solvents and a new solvent parameter, S VW. The cooperative effect of a proton-donor solvent on the strength of hydrogen bonds in complexes of phenol and diphenylamine with bases was evaluated. It was demonstrated for the first time that the cooperative effect in the examined systems can lead to both strengthening and weakening of hydrogen bonds. © 2007 Pleiades Publishing, Ltd.

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